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Did Indians not have any Maps?

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Introduction: Indian maritime history starts with Vedic period (c.8500 - 3500 BCE) and well established during the IVC civilization (2250 – 1950 BCE) and followed in the Janapatas (c.3100 BCE onwards), Mauryan Empire (c.1400 - 300 BCE) and thereafter[1]. The Indian presence in the SEA countries, Central Asia, China, Middle-east, and other areas is traced before and after the first centuries of Current Era (CE). Though, the land-route is attributed to the movement of men and material through trade routes and silk-route, the movement to SEA countries in the east and middle-east, African countries has been sea-route only[2]. Thus, the maritime trade involving movement of men and materials with ships sailing on specific routes in specified time to reach the destination for conducting trade and return back to India accordingly is clearly implied[3].

Non-Indian medieval narrative based interpretations say that Indians did not have maps: However, coming to the maps of India, scholars note that only medieval Indian maps are shown as evidence to prove that Indians did not have maps for the earlier period[4]. The most often given cosmological description of the world

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[1] The dates mentioned are based on astronomical and archaeological evidences correlating in a comprehensive inter-disciplinary study of connected subject matter. The present history books may differ in dating such events and hence both have been incorporated as upper and lower limits.

[2] There have been many books to prove the Indian / Hindu / Vedic presence throughout the world and particularly in the other countries and some are mentioned here for illustrative purposes: Aural Stein collection for land route and the account of European travellers.

[3] The presence of Indian goods in the ancient world found in many civilizations and they must have crossed over through sea and oceanic routes only.

[4] European writings and as well as the current scholarship repeat the dictum:
Kapil Raj, ***Circulation and Emergence of Modern Mapping: Great Britain and Eatly Colonial India, 1764-1820***, in ***Relocating Modern Science – Circulation and Construction of Scientific Knowledge in South Asia and Europe***, Permanent Black, New Delhi, 2006.
Susan Gole, ***Early Maps of India***, Sanskriti, New Delhi, 1976.
Celebrating the Quest, at website:
http://www.gisdevelopment.net/magazine/gisdev/2003/july/greatarc.shtml
K. G. Behl, ***Contribution of Indians in the Measurement of the Great Arc of the Meridian on the Earth's Surface Accompanied by the Great Trignometrical Survey***, available at website:
http://www.thegreatarc.net/downloads/24-56.pdf
Teotonio R. de Souza (Ed.), ***Discoveries, Missionary Expansion and Asian Cultures***, Concept Publishing Company, New Delhi 110059, 1994, pp.175-183.
Matthew H. Edney, ***Mapping an Empire: The Geographical Construction of British India, 1765-1843***, 1999.
The general details on the Great Arc can be obtained from this web:
http://www.thegreatarc.net/
Incidentally, voluminous material both unpublished and published are available on the topic, which has been carefully compiled by Matthew H. Edney and available in the website:
http://www.usm.maine.edu/~maps/edney/indiabib.html

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smacks any scientific explanation, as the depicted figures do not suitable for the navigational practices. In contrast, the western claim the Babylonian, Greek, Chinese and Arabic origin of Cartography. Even the advent of the Europeans, their search for and acquirement of maps, British period is glorified, as if they conducted survey and prepared maps[5]. The conduct of survey involves a lot of mathematical knowledge of trigonometry, usage of measuring instruments, longitudes and latitudes etc., but, the claimed civilizations did not have such comprehensive information, whereas, Indians had and continued to engage in survey techniques[6]. Therefore, a doubt arises as to how the Indians could not have maps? Thus, follows the study of Indian maps.

Indian Cartography: Indian cartography dates back to Vedic literature, as the places described have been geographic, geologic and many times with aerial depiction. The Astronomical and Puranic description has been unique in such picturisation. Both Sanskrit and Tamil literature has been unanimous in describing the globe with such physical features. Map is a diagrammatic or pictographic representation of an area of land or sea showing physical features, cities, roads etc. and collection of data showing the spatial arrangement or distribution of factors related to such representation or any data over an area and Cartography is construed accordingly as the science or practice of drawing maps. As maps are drawn or printed on perishable material – cloth, parchment, bark, palm-leaf and such other material, which could have lasted for a particular period. The mention of maps embossed on metal sheets, foils or leaves have been unique in Indian cartography vividly described and recorded in Puranas. To substantiate, other correlative and circumstantial evidences are discussed.

The Vedic- Jaina-Buddhist-Hindu pilgrimages: The concept of pilgrimage has been ingrained in the minds of Indians since immemorial or historically from the Vedic period (c.8,500 BCE). With the Jains and Buddhists, it flourished throughout the world, wherever they went in search of wealth or to spread their religion. The spread of Jainism throughout the world has not been studied properly, but their presence had been remarkable in many lands closely associated with Nagas[7]. Of course, the Buddhist spread has been remarkable and their influence had been imprinting effect[8], till it was checked by Hindus theologically[9] by c. 550-500 BCE and Mohammedans by physically[10] by c. 11th -14th centuries in India and 14th to 19th centuries and even after in other areas

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[5] F. Wilford, ***Asiatic Researches***, Vol.VIII, pp.270-271, Vol.X, p.140.

[6] P. Shanmugam, ***The Revenue System of the Cholas 859-1279***, New Era Publications, Madras, 1987.

[7] Origin of Jainism is traced to IVC:
Joseph Campbell, ***Oriental Mythology***, The Viking Press, New York, 1962, pp.219-220.
John Koller, ***The Indian Way***, MacMillan Publishing Co., New York, 1982, p.113.

[8] Donald A. Mackazie, ***The Pre-Christian Buddhism in Great Brituan and Ireland***,

[9] Adisankara has been credited with for grouping all Indian faiths bring them under the "Sha mata" categorization so that the influence of other faiths was controlled.

[10] Destruction of Taxila, Nalanda etc., from the medieval period to bombing the Bamiyan Buddha statue in the 21st century prove the fact.

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(the recent destruction of Bamiyan Buddha). Then, Hindus followed the suit and their pilgrimage schedule – 12 Lingas, 108 Sakti-pitas, 108 – Vishnava Divyadeshas, Kasi-Rameswaram and other long and short distance yatras, periodical Kumba-melas, festivals and gatherings. So, all these could not have been taking place without any geographical knowledge of location of places. Definitely, the Sthalapuranas (the history of the pilgrimage place) and Puranas (the detailed history) arose only catering to the needs of pilgrimage with directions, instructions and maps, as otherwise, they need not have contained cosmological and geological data and information. Here, it has to be noted that all are in consonance with 12 year cycle, 6 year cycle, annual phenomenon of Sun's movement – vernal equinoxes, monthly-weekly-daily movement of planets and asterism and playing important role. It may be easily noted that those who are involved in these activities have been more time and astronomical conscious than others (including the learned ones). Even today, we can note as to how the people from villages have been more precise about days and months telling their nature in terms of Sun (Solar calendar), Moon (Lunar calendar) and Stars (asterism coinciding with Zodiac and seasons, months and days). Thus, the Puranic accounts vouchsafe the usage of maps.

Cakravarti Kshetra, Land survey and Taxation: D. C. Sircar[11] has pointed out the existence of Cakravarti Kshetra concept existing among the Indian Kings at least since c.3100 BCE in mentioning the geographical boundaries of Bharatvarsha specifically as Himalayas in the north, Kumari in the South, Eastern Ocean in the East and the Western Ocean in the West. So when the Chinese, Egyptians, Babylonians, Assyrians and Greeks starting developing their knowledge, they only modified their understanding as exhibited in their recordings. As time passed with changing material culture in the respective regions, the exhibited cultures show variance in dress, speech, writing and other forms with Indian patterns hidden. That is why, though, their claims go back to c.500 BCE, the existing material evidence point to medieval period, as they had / have been reportedly redrawn, reconstructed, copied from the original or secondary one, which itself reported to be lost or missing and so on. That tax is collected from the citizens proves the specific area connected with goods and services of an organized society, polity and state. That 1/6th (16.67%) of produce[12] are collected by most of the rulers uniformly again proves the established rationalization of and structured tax (based on both Sanskrit and Tamil texts) evidently after a conducted survey.

The Essentials of Cartography – Map-making: The following fundamental knowledge is required in cartography or map-making:

- Cardinal points, orientation, Trigonometry
- Longitude and latitude

[11] D. C. Sircar, ***Cosmography and Geography in Early Indian Literature***, in Indian Studies Past and Present, Calcutta, 1967.

[12] K. V. Ramakrishna Rao, ***Taxation through Ages up to 712 CE –Method of collection***, in Chennai Vani, 1997. ***Taxation through Ages (Up to 712 CE)***, in Chennai Deep, Chennai, 2003, No.3, pp.20-23.

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- Standard meridian and equator
- Magnetic poles
- Scale
- Idea of relief, projections etc.
- Cartograms, use of conventional signs
- Geographical instruments

Indian literature and as well as the archaeological evidences amply prove that Indians had such knowledge since Vedic period. Definitely, IVC to Mauryan period show enough evidences to that effect. Therefore, not availability of maps cannot be an evidence to prove that Indians had no maps. Mayaprasad Tripathi[13] has shown how the survey, cartography and cartographical symbolism have been existing in India since Vedic period in detail. His pointing of the usage of Tortoise as the primitive projection for the globe, as conceived in the Satapathabrahmana has been significant. He has shown as to how the ancients modified the Kurmanivesa, Svarodaya and other ancient text to get "Orbis Terrarum" by the Romans, Madaba of Jerusalem by the Jews, "circular boundaries with rectangles" of the Chinese (after H. B. Hubert), etc. Even the medieval Arab (al-Balkhi, al-Istakhri, al-Haqual, al-idrisi) and European maps (Beutua, Herford, T. O. Map) were following the five-petal shape projection of Puranic concept.

The Greeks had Indian Maps: We have to read the writings of the westerners very carefully, as we Indians do not understand their way of writing, because of their dexterity in the usage of words, double negative and complex sentences. The very first sentence of Major General Sir Alexander Cunningham[14] of his famous book "Ancient Geography of India" is as follows: "***From the accounts of the Greeks, it would appear that the ancient Indians had a very accurate knowledge of the true shape and size of the whole country***".

- Country – whether it was desha, varsha, kanda, dwipa has to be decided in time and place.
- The whole country – as above and moreover, the Greeks themselves acknowledge that the "India" as they conceived was not India, but India had spread to the extent of "India extragangum" and "India intragangum".
- Size of the whole country – dimension, magnitude, volume, spread of the country
- Shape and size of the whole country – form, figure, outline, profile, countour of the country.
- the true shape and size of the whole country – and the size and shape as recorded by the ancient Indians are certified "true".
- knowledge of the true shape and size of the whole country – data, information facts of the shape and size available.

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[13] Maya Prasad Tripathi, ***Development of Geographic Knowledge in India***, Bharatoya Vidya Prakashan, Varanasi, 1969.
[14] Alexander Cunningham, ***The Ancient Geography of India***, Indological Book House, Varanasi, 1963, p.1.

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- accurate knowledge of the true shape and size of the whole country – such data, information facts of the shape and size available were accurate by c.500-300 BCE.
- a very accurate knowledge of the true shape and size of the whole country – and it is not just accurate but very accurate – precise, correct, perfect.
- the ancient Indians had – so Indians had such knowledge before the Greeks
- From the accounts of the Greeks – however, such fact, he has to know only from the Greeks and not from Indians.
- it would appear that – thus, it is revealed to him as so. Thus, even, if Indians were awaked to know the truth, he would say that he had only opined but not sure about what he said!

Thus, the fact being that the Greeks obtained such accurate knowledge from the ancient Indians and this statement is made only correlating with other evidences of Pythagoras[15] (flourished c.570 BCE), Xenophoe, Plato, Aristotle, and others who came to India for learning[16], collecting books[17] and pilgrimage[18]. However, after Pythagoras, there had been bitter enmity developed between the Khastriyas of India and Greece[19] and the Greek Indians started asserting their identity (Sesac invades India c.971 BCE) and detaching from India (for example Homer fashioned the gods for the Greeks). According to Newton, Sesac left also in Colchos Geographical Tables of all his conquests: And thence Geography had its rise (in c.965 BCE).....Sesac divided also the land of Egypt by measure amongst his soldiers, and thence Geometry had its rise (in c.964 BCE). Amphictyon brings the twelve Gods of Egypt into Greece (in c.963 BCE), and these are the *Dii magni majorum gentium*, to whom the Earth and Planets and Elements are dedicated[20]. Thus, after coming to India, suddenly all subjects are introduced in Greece every year!

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[15] Richard Garbe and others have discussed about Pythagorus in India.
Riedweg, Christoph ***Pythagoras: His Life, Teachings, and Influence***. Ithaca, New York: Cornell University Press, 2002, p.8.

[16] Generally, the visit of the Greek philosophers –Pyrrho, Anaxarchus, Onesicritus, Apollonius, Milinda Panho, Megastheses, Heliodrus and others were explicitly acknowledged, but that of Pythagorus, Aristotle, Plato and others were either explained away or suppressed.

[17] Persians, Greeks came to collect books, as could be noted from the writings of their respective literature/manuscripts.

[18] The Greeks forged their documents and went ob writing that Sesac, Bacchus, Dionysus and others conquered India. In such attempt, they added Alexander also. Actually, none of them appeared in history before medieval period. Even in J. B. Bury's book, one cannot see these names except Alexander. Taking clue from the Persian works of "Sikander", they equated Alexander with "Sikander" making him to invade India. As they wanted to reduce the date of Asokan pillars, then, the western scholars cleverly fabricated to write that Sesac erected four pillars on the banks of Ganges to mark his victory. As the Greeks were the excommunicated Khastriyas, their hatred against Indian Khatriyas had been normal, which was later interpreted as the Greeks invading India and so on. That is why the Greek material and non-material culture exhibit much Indian resemblance.

[19] Edward Pockocke, ***India in Greece***, Cosmos Publications, New Delhi.

[20] Isaac Newton, ***The Chronology of Ancient Kingdoms Amended***, available online:

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Indian Maps on Golden sheets / Leaves: As pointed out by M. P. Tripathi[21], D. C. Sarcar[22], H. B. Sarkar[23], the first reference to Indian cartography or map-drawing appears in the Danakhanda or gift-sections of the Puranas.
Matsyapurana[24] says that a replica, diagram or map of the earth should be drawn on a sheet of gold, incorporating Jambudvipa, with Maryada mountain, Meru, oceans, rivers etc., for gift to the Brahmanas on the occasion of certain religious ceremonies.
Brahmandapurana[25] postulates that two hundreds thousand yojanas can be represented by half-an-anguli, as hundreds of thousands of yojanas could not be represented on such maps or globes.
Lingapurana[26] says that such a world-map has to be drawn up on a quadrilateral gold sheet, measuring one cubit (Hasta) on one of its sides, but such representation of the world could also be made, according to the Skandapurana in circular form[27].
However, the Siddhanta works[28] mention about the preparation of globes with wood, obviously for practical and demonstration purposes. Manimekhalai[29], Post-Sangam Tamil work dated to 1st century CE mentions about a globe made of earth / clay. In fact, it is nothing but a globe model mentioned as "Chakravalakottam", made of earth with proportionate parts showing all the details as follows: Oceans surround the entire area. Meru was at the centre (S.I.6), surrounded by seven mountain ranges, four big islands with rich tradition, surrounded with 2000 small islands. Other living and non-living things were depicted at their respective places and surrounding climates for educative purpose Mayan was the creator the model (M.6:200-202). This description of world exactly fits with Siddhantic and Puranic description. This example proves the common tradition and heritage of Indians, in spite of the languages used.

Missing Gold plate maps: Copies of many maps of the types discussed above are available in the Indian Manuscript Libraries and private collections, but none of these are more than 300 years. Therefore, earlier maps and also the maps representing continents, countries, cities and towns must have been taken away by the European

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[21] Maya Prasad Tripathi, opt.cit
[22] D. C. Sircar, ***Studies in the Geography of Ancient and Medieval India***, Motilal, New Delhi, 1971.
[23] H. B. Sarkar, H. B. Sircar, "The Port of Tamraliptl in Fiction and History," in Perala Rat· nam (ed.), Studies in Indo-Asian Art and Culture (Delhi, 1972).
[24] Ariel Glucklich (2008). "***Maps and Myths in the Matsya Purana***". The Strides of Vishnu : Hindu Culture in Historical Perspective: Hindu Culture in Historical Perspective. Oxford University Press. pp. 145–162.
[25] G.V. Tagare, ***Brahmandapurana***, Motilal Banarasidas, 1958.
The entire Earth is remembered as fifty crores (of Yojanas) in extent.Chapter 21 - Description of the solar system: 13-16. Its situation from an upword measure (?)is as far as the Meru. Half the extent of the earth is stated in terms of Yojanas. The extent of the earth towards all the sides (quarters) from the middle of the Meru is remembered as one crore and eighty-nine lakhs (of Yojanas) and fifty thousand. Hence, the extent of the circular section of the earth is roughly eleven crores and thirty-seven lakhs. This is reckoned as the extent of the surface of the Earth.
[26] J.L. Shastri, ***Lingapurana***, Chapter 52 - Geography of the World (bhuvanakośa) 1951.
[27] Skandapurana
[28] Surya Siddhanta, Aryabhatiyam, Bhaskariyam and other works.
[29] Manimekhalai M.6:200-202

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travelers and scholars. F. Wilford[30] says that he had seen world and other maps prepared according to Indian Siddhantic and Puranic works. The missing of Gold-maps can easily be understood that they must have taken away by the Mohammedan and European scholars and rulers. The trade permissions and agreements given by the Indian Kings graciously to the European Companies since 1600 CE had been on Gold sheets, but none of them were available, as they themselves admitted that they disappeared or were missing[31]. Thus, the tradition of recording gift, grant, sanction, permission on the gold sheet earlier and later on copper plates etc., shows a continuous Indian historical tradition. However, with the advent of Europeans, they have been reduced to mere paper.

The 500 BCE to 1500 CE claims of Westerners, questionable: In contrast, the western claim of Babylonian, Greek, Chinese and Arabic origin of Cartography is also questionable as they contradict on the following points:

- Gnomon as a primitive kind of Sun-dial is attributed to Anaximander so that latitudes could be determined. However, Herodotus (Vol.2, p.109) states that the Greeks learned the usage of the gnomon from the Babylonians.
- Again, Anaximander is credited with map-making with the claim that he "***was the first person who attempted to represent the surface of the earth, with boundaries of the countries upon it, and their leading features***". However, such "attempted representation" is not available.
- The "***usage of map by Aristagoras***" at Sparta by 499 BCE etc., have no documentary evidences except literary evidence.
- So also the claim of Hecataeus world map dated to c.520 BCE, the world according to Herodotus, Strabo, Ptolemy!
- In fact, the maps attributed to them had been evidently drawn by others dated to medieval period based on the "travellers' tales"!
- The medieval European maps expose the "cartographical knowledge" of European "cartographers" and so also that of Arabs.
- Only in 18th century, somewhat discernable maps started appearing, that too after establishing contact with India.
- Anthony Monserrate (1536-1600), Claude Stanislaus Boudier (1686-1757), Jean-Venant Bouchet (1655-1732), Joseph Tieffenthaler (1710-1785), Francis Xavier Wendel (c.1730-1803), James Runnel (1742-1830), etc, have collected many-many Indian maps, charts, tables, samples and books on different sciences including Geography.
- Thus, the first reliable map of India was the work of D'Anville, achieved due to the meticulous field-work done by the above Jesuits.

As the Indian maps, geographical diagrams, pictures, charts were continuously taken away by the missionaries, the maps drawn by Indians were available and they are accused of their ignorance of "cartography" in spite of their ship-building, navigation and oceanic adventures undertaken to different countries! But, it is evident that Indians

[30] Wilford, Vol.VIII, 1805, pp.270-271; 267-334; Vol.X, pp.127-157.
[31] C. S. Srinivasachari, ***History of the city of Madras***, P. Vardachary and Co., Madras, 1939.

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had maps, as they had the required knowledge of gnomon, longitude-latitude, triangulation, geodetic survey, projection and the maps prepared were definitely taken away by the Chinese, Arabs and Europeans.

Francis Wilford to Bouchet: Francis Wilford[32] attested that India had maps as follows:

"*Besides geographical tracts, the Hindus have also maps of the world both according to the system of the Pauranics and of the astronomers; the latter are very common. They have also maps of India and of particulars districts, in which latitudes and longitudes are entirely out of question, and they never make use of a scale of equal parts. The seashores, rivers and ranges of mountain are represented by straight lines. The best map of this sort I ever saw was one of the kingdom of Nepal presented to Mr. Hastings. I was about four feet long and two and half broad, of pasteboard, and mountains raised about an inch above the surface, with three planted all around. The roads were represented by a red line and the rivers by a blue line. The carious were very distinct with a narrow passes through them; in short, it wanted but a scale, the valley of Nepal was accurately delineated; but towards the borders of the map everything was crowded and in confusion*".

D. C. Sircar[33] aptly recorded that, "***Unfortunately Wilford does not say anything about the antiquity of the Indian maps noticed by him***". Thus, it is evident that after taking the maps, they just to disparage Indian cartography so that the coming generation feel ashamed of the knowledge of their forefathers instead of feel proud and proceed further for new inventions and discoveries. Anyway, his recodings prove the following facts:

- There are "*maps of the world both according to the system of the Pauranics and of the astronomers*" even at his times.
- The "*latter are very common*" and were in demand and taken away by them and as well as by the Arabs as noted by K. A. Nilakanda Sastry[34].
- By noting that "*They have also maps of India and of particulars districts, in which latitudes and longitudes are entirely out of question, and they never make use of a scale of equal parts"*, he tried to kill two birds by one shot.
- Rennell's copying was suppressed and that Europeans had the problem[35] *latitudes and longitudes* of is also concealed and covered up.
- Thus, we can see how on the reconstructed and redrawn maps of Ptolemy[36] and others, they superimposed latitudes and longitudes, as if they were drawn by Ptolemy.

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[32] Wilford, opt.cit.
[33] D. C. Sircar, opt.cit.,
[34] K. A. Nilakanta Sastry, ***The Colas***, University of Madras, Madras, 1984, pp.458-460.
[35] Rennell, James (1830). ***The geographical system of Herodotus examined and explained, by a comparison with those of other ancient authors, and with modern geography***. Vol. 1 and 2. London: C.G.J. and F. Rivington.
[36] The maps attributed to Ptolemy are not available and the ones shown and printed are only the medieval and later drawn pictures, which have no historical value as for as the dating is concerned.

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Recently, Kapil Raj[37] has pointed out the following Indian globes and maps:

- At least half a dozen cosmographic globes all largely based on the Puranas, are known to have existed and are held in various collections in Britain and India.
- The oldest and perhaps most fascinating of these is the bugola of Ksema Karna[38], a globe shaped brass container intricately etched to indicate the various components of the earth based on the Puranic sources, but modified in the light of knowledge of the post-Ptolemaic Sanskrit astronomers.

Collection of maps by the Missionaries: Fr. Jean-Venant Bouchet (1655-1732), came to India after expelled from Siam. Interestingly, he started collecting Indian maps from South India and drawing maps. Ironically, thus, the first dependable map of the interior of the southern peninsula was attributed to him. Bouchet was born at Fontenay-le-Comte in France, he joined the Society in 1670 and was a member of the expedition sent to Siam in 1687 by king Louis XIV. There were 14 Jesuits in all, formally designated as 'The Mathematicians of the King'. They arrived in Siam in 1688, but were expelled the same year as a result of a revolution that overthrew the king for their involvement. The missionaries left for India, but only three survived the ordeal and reached Pondicherry on 17th February, 1689, two of them being Fr. Bouchet and Fr. Jean Richaud. It is not clear who the third Jesuit was. On arrival in India, Bouchet joined the Madura Mission, but left it in 1702 to set up the Carnatic Mission. Bouchet covered the Coromandel coast on foot, made astronomical observations at Pondicherry, and prepared maps and sketches, of course collecting maps. In 1719 Bouchet sent to France his map of Madurai and the neighboring kingdoms, extending it to slightly north of latitude 14° N along with Indian ones.

The French connection: Obviously there was some sort of coordination between the Jesuit data collectors on the one hand, and the French commercial and political interests, on the other. Because of the map being drawn by a small scale of not quite an inch to one degree of latitude and consequently not capable of giving the countries in any considerable detail, the Jesuits sent over several manuscript charts, and other materials, from which D'Anville composed a new map. It was drawn by a scale nearly twice as large as the former, and was a great deal more particular as well as accurate, and extended further north. D'Anville published his map of the southern Peninsula in 1737 and followed it by his famous Carte de Linde in 1752. An important feature of this map was that he left blank very conscientiously those parts of India, about which he did not have authentic knowledge. The significance of D'Anvillc's efforts can be judged from

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Europeans did not the idea of latitude and longitude and they spent heavily to tackle the problem. Therefore, suppressing the fact, Wilford tried to record that Indians had no knowledge of it. In fact, even in Mahabharat, it is mentioned that Hastinapura, Ujjain, Kumari and Lanka are in the same longitude and the four cities – Siddhapura, Yavakoti, Romaka and Lanka are on niraksha – 0° latitude at 90°. In fact, "Greenwich" has been evolved only out of Ujjain.

[37] Kapil Raj, ***opt.cit***, pp.83-85.

[38] Simon Digby, ***The Bhugola of Ksema Karna: A Dated Sixteenth Century Piece of Indian Metalware***, Art and Archaeology Research Papers, vol.4, pp.10-31, 1973.
The globe is presently held at the Museum of the History of Science at Oxford.

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the fact that his Memoirs were translated, annotated, and published with a reprint of his map in London in 1754. Bouchet's companion Fr. Richaud discovered in 1689 that the bright southern star Alpha Centauri was in fact a double slur. This was the second binary ever discovered. Earlier in 1685 Jesuit, Fr. Fontenay, had discovered from the Cape of Good Hope the First binary Alpha Crucis. Richaud's was the first credited astronomical discovery from India. Thus, the Jesuits discovered many things, the moment, they had contacts with India!

Upside maps coinciding with the Mahabharat map: Interestingly, the following web[39], several upside down world maps are depicted, however, without giving any reason. Surprisingly, such depiction resembles the ancient Hindu maps[40]. It is a common practice that the dominant Empire, country or ruler always keeps his country at the centre and studies about other countries for any aspect. Thus, when India was dominant, Indians viewed the world from their view point. In fact, if India is placed at the centre (of course, even now, it is at the centre only) and all other countries are brought near, they exactly match with Indian boundaries. Iran, Arabia, African countries on the west and all the SEA countries along with Australia on the east encircle and join together with India at the centre. Of course, the South America would fit into East-African coastal line. Interestingly, in all these Southern / South touching countries have close connection with India in many aspects. No doubt, it could have happened millions of years ago. But, such view gives basis for the Indian depiction of maps.

Conclusion: From the above discussion, the following conclusions are drawn:

- The geographic and geologic knowledge as exhibited in the Vedas, Puranas and Itihasas show the definite cartographic knowledge existing in India.
- Ancient Indians travelled throughout the world with their knowledge of land, inland-water and sea-oceanic routes.
- The Siddhantic and Puranic narratives clearly prove the existence of such cartographic knowledge useful to the pilgrims, travelers, traders and others.
- After the intrusion and invasion of non-Indians during the course of times and their meddling with the Indian social, religious, economic and other established systems, the age-old practices were curtailed, distorted and changed also.
- Most of the material evidences were destroyed, taken away and transformed so that they appeared as if others discovered and invented. However, the traces of literary evidences prove the fact of Indian origin.
- The ancient Indian literature has to be researched, compared with modern changes and interpreted in the current context, as they have been time-tested and helped Indians for many thousands of years.

[39] Francis Irving, ***The Upsidedown Map Page - It needn't be a Eurocentric world***, http://flourish.org/upsidedownmap/

[40] Rabbit and Fig leaves map – upside view matches with te world map.

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